Space Weather Forecast

Issued on Tuesday, 21 June 2022 at 13:00 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Daily chance of an isolated Moderate-class X-ray flare.
Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with occasional common class X-ray flares, the largest of which came from a region that is moderately large and complex region, in the northwest quadrant. All other regions are small or relatively simple and stable.

No Earth directed CMEs (Coronal Mass Ejections) were observed on available imagery. Faint, narrow ejecta was observed following a low level Common-class flare from a region in the western hemisphere, close to the solar equator at 20/2355 UTC. The ejecta was directed mostly to the south and west, with a rather slow movement. This was modelled with no impacts expected.

Solar Wind / Geomagnetic Activity: The solar wind speed decreased gradually, although a little erratically from elevated to strong levels, to slightly elevated to elevated levels. The total magnetic field strength was generally weak, with weak fluctuations in its important north-south component. Geomagnetic activity was occasionally Unsettled (Kp 3) before midnight UTC, otherwise Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The high energy proton flux remained at background, with no solar radiation storms observed in the period.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be Low, with a daily chance of an isolated Moderate-class flare and a very slight chance of a Strong flare.

Solar Wind / Geomagnetic Activity: No CMEs currently feature in the forecast.

Solar winds should continue their initial decline and return towards slow-ambient levels by Day 3. They are expected to become slightly elevated to elevated during Day 4, under the influence of a coronal hole HSS (CH93/-). Geomagnetic activity should be mostly Quiet with perhaps the odd Unsettled interval through much of the period, but become Unsettled to Active with a slight chance of a G1/Minor storm during Day 4 (24th).

Energetic Particles / Solar Radiation: Solar radiation storms are not likely in the period and proton flux should remain at background levels. However, there is a daily slight chance of an S1 or greater event occurring, due to the presence of a moderately large and complex sunspot region transiting the northwest quadrant.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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